

Amendment under 37 CFR §1.111
Application No. 10/519,255
Attorney Docket No. 043075

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1. (Currently amended): A thermomechanical treatment method for a Fe-Mn-Si-based shape memory alloy with Nb, C addition comprising:

deforming a Fe-Mn-Si-based shape memory alloy ~~with Nb, C addition containing Nb and C without substantial NbC precipitation~~ by a deformation ratio of from 5% to 40% at room temperature, and

subjecting the ~~deformed Fe-Mn-Si-based shape memory alloy after deforming to aging heating treatment to precipitate NbC carbides,~~

~~wherein the Fe-Mn-Si-based shape memory alloy with Nb, C addition comprises, as alloy components, Mn: 15% to 40% by weight, Si: 3% to 15% by weight, Nb: 0.1% to 1.5% by weight, C: 0.01% to 0.2% by weight, and Fe and inevitable impurities: residual amount, wherein the atomic ratio Nb/C between Nb and C is 1 or more.~~

2. (Cancelled).

3. (Currently amended): A thermomechanical treatment method for a Fe-Mn-Si-based shape memory alloy with Nb, C addition as claimed in claim 1, wherein the Fe-Mn-Si-based shape memory alloy with Nb, C addition further comprises, as alloy components, ~~Mn: 15% to~~

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~~40% by weight, Si: 3% to 15% by weight, Cr: 1% to 20% by weight, Nb: 0.1% to 1.5% by weight, C: 0.01% to 0.2% by weight, and Fe and inevitable impurities: residual amount, wherein the atomic ratio Nb/C between Nb and C is 1 or more Cr: 1% to 20% by weight.~~

4. (Currently amended): A thermomechanical treatment method for a Fe-Mn-Si-based shape memory alloy with Nb, C addition as claimed in claim [[1]] 3, wherein the Fe-Mn-Si-based shape memory alloy with Nb, C addition further comprises, as alloy components, ~~Mn: 15% to 40% by weight, Si: 3% to 15% by weight, Cr: 1% to 20% by weight, Ni: 0.1% to 20% by weight, Nb: 0.1% to 1.5% by weight, C: 0.01% to 0.2% by weight, and Fe and inevitable impurities: residual amount, wherein the atomic ratio Nb/C between Nb and C is 1 or more Ni: 0.1% to 20% by weight.~~

5. (Currently amended): A thermomechanical treatment method for a Fe-Mn-Si-based shape memory alloy with Nb, C addition as claimed in any one of claims ~~2 through 4~~ 1, 3, and 4, wherein the atomic ratio between Nb and C is set in a range of from 1.0 to 1.2.

6. (Currently amended): A thermomechanical treatment method for a Fe-Mn-Si-based shape memory alloy with Nb, C addition as claimed in any one of claims ~~2 through 4~~ 1, 3, and 4, wherein the Fe-Mn-Si-based shape memory alloy with Nb, C addition contains, as impurities,

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Cu: 3% by weight or less, Mo: 2% by weight or less, Al: 10% by weight or less, Co: 30% by weight or less, and/or N: 5000 ppm or less.

7. (Currently amended): A thermomechanical treatment method for a Fe-Mn-Si-based shape memory alloy with Nb, C addition as claimed in any one of claims ~~1 through 4~~ 1, 3 and 4, wherein the conditions for the aging heating treatment are a temperature range of 400°C to 1000°C and a time period from 1 minute to 2 hours.